to the rules and tables given in the International Meteorological Tables, published by the International Committee in 1890. These computations will be subject to slight revision whenever the actual force of gravity shall have been determined at these stations. In reducing observations published in earlier numbers of the MONTHLY WEATHER REVIEW so as to be comparable with those published in the MONTHLY WEATHER REVIEW for May, and succeeding months, the following table will be convenient. It has already been adopted by the Central Observatory of Mexico, and was first used in reducing the Mexican data for May.

Table for reducing local barometric pressures by mercurial barometers at Mexican stations to standard gravity.

Station and observatories.	Metric system.			English system.		
	Latitude term.	Altitude term.	Total.	Latitude term.	Altitude term.	Total.
	Mm.	*Mm.*	*Mm.*	*Inch.*	*Inch.*	*Inch.*
Chihuahua (Obs. d. Est.)	−0.90	−0.18	−1.08	−0.035	−0.007	−0.042
Colima (Sem.)	−1.46	−0.07	−1.53	−0.058	−0.003	−0.061
Culiacan (Est.)	−1.27	−0.00	−1.27	−0.050	−0.000	−0.050
Durango (Sem.)	−1.06	−0.22	−1.28	−0.042	−0.009	−0.051
Guadalajara (Hos. d. Belen)	−1.28	−0.19	−1.42	−0.048	−0.007	−0.055
Guanajuato (Est.)	−1.15	−0.24	−1.39	−0.045	−0.009	−0.054
Jalapa (Est.)	−1.31	−0.18	−1.49	−0.052	−0.007	−0.059
Leon (Est.)	−1.19	−0.22	−1.41	−0.047	−0.009	−0.056
Linares (Obs. particular)	−1.23	−0.05	−1.28	−0 048	−0.002	−0.050
Mazatlan (Obs. Ast. and Met.)	−1.36	−0.00	−1.36	−0.054	−0.000	−0.054
Merida (Est.)	−1.43	−0.00	−1 43	−0.056	−0.000	−0.050
Mexico (Obs. Cent)	−1.18	−0.26	−1.44	−0.046	−0.010	−0.056
Monterrey (Est.)	−1.16	0.07	−1.23	−0.046	−0.003	−0.059
Morelia (Sem.)	−1.23	−0.23	−1.45	−0.048	−0.009	−0.057
Oaxaca (Est.)	−1.36	−0.20	−1.56	−0.054	−0.008	−0.062
Pachuca (Est.)	−1.13	−0.27	−1.40	−0.044	−0,011	−0.055
Puebla	−1.21	−0.26	−1.47	−0.048	−0.010	−0.058
Queretaro (Est.)	−1.20	−0.22	−1.42	−0.047	−0.009	−0.056
Real del Monte (Comp. Minera)	−1.09	−0.30	−1.39	−0.043	−0 013	−0.055
Saltillo (Col. S. Juan Nepomuceno)	−1.03	−0.20	−1.23	−0.041	−0.008	−0.049
San Luis Potosi (Inst. Cient.)	−1.14	−0.22	−1.36	−0.045	−0.009	−0.054
Tampic · (Hos. Mil.)	−1.41	−0.00	−1.41	−0.056	−0.000	−0.056
Toluca (Est.)	−1.13	−0.30	−1.43	−0.044	−0.012	−0.056
Tuxtla Cutierrez (Est.)	−1.55	−6.08	−1.63	−0.061	−0.008	−0.064
Zacatecas (Est.)	−1.04	−0.27	−1.31	−0.041	−0.011	−0.052
Zapotlan (Sem.)	−1.28	−0.19	−1.47	−0.050	−0.007	−0.057

SNOWFALL AND ITS EQUIVALENT IN WATER.

Prof. A. G. McAdie, Forecast Official, San Francisco, calls attention to the snowfall at Fordyce, Cal., on February 8. The voluntary observer, Mr. E. E. Roeming, carefully measured the depth of the snow on this occasion as being 36 inches, but when melted it amounted only to 1.70, and he adds that when the temperature is only 15° F. during the snowfall, it takes a large amount to make an inch of water. The ratio of snow to water in this case is as 21 to 1, and Professor McAdie states that he has been told by reliable observers in the mountains of California that a ratio of 17 to 1 sometimes prevails.

Of course it is well known that the ratio of 10 to 1, which is used by the Weather Bureau when there have been no actual measurements of the melted water, is at best a crude approximation, since the ratio may vary anywhere between 3 and 20. The ratio of 21 to 1 observed on February 8 by Mr. Roeming is rare, but by no means unique. In fact, other measurements made by him during the same month of March give the following ratios:

March 2, 20; March 3, 20; March 4, 17; March 5, 7.5; March 6, —; March 7, 20; March 8, 21; March 18, 8; March 19, 2.5.

All these snowfalls occurred with southeast or southwest winds. The temperatures are not given on his monthly form. There are many days on which the depth of snowfall is not given, so that the total monthly snowfall of 107 inches and the total equivalent precipitation, 16.34, may not be precisely comparable. As they stand, however, they give an average ratio of snowfall to melted water 6.5 to 1.

HAIL INSURANCE.

In a clipping from the Advance, of Stillwater, Okla., we note that a severe hailstorm devastated a strip of country 4 miles wide and 18 miles long near El Reno, Okla., on May 15. The report states that live stock was killed, and wheat fields, orchards, and all growing crops within the storm's path were totally destroyed. The loss was estimated at $80,000, but a part of this was covered by hail insurance. The placing of insurance against loss from this source was commended in the April number of the MONTHLY WEATHER REVIEW.

A fall of hail to the average depth of 1 inch over a region 4 miles wide and 18 miles long is a fall of 167,340,000 cubic feet of ice. Ice weighs between 55 and 57 pounds per cubic foot. This total mass, therefore, represents very nearly 1,000,000 tons (2,000 pounds to the ton). But this mass must have been raised up from the ocean level to that of the clouds by some previous meteorological agency. The average elevation from which it fell may be taken as 5,000 feet. Now to raise 1,000,000 tons 5,000 feet is to do 5,000,000 foot-tons of work. But in estimating the power of an engine to do work we speak of foot-pounds per minute or horsepower; we say 1-horsepower is the ability to raise 33,000 pounds 1 foot in 1 minute; therefore, an engine of 1-horsepower is able to raise almost exactly 1,000 tons one foot in one hour, or one-fifth of a ton 5,000 feet in one hour, or 1 ton 5,000 feet in five hours. The work of raising 1,000,000 tons of ice by evaporation from the ocean water up to the level of the clouds may therefore be considered as representing the work done by an engine of 1,000,000 horsepower, and therefore represents the work of a 1,000,000-horsepower engine working for five hours. When this ice falls to the ground the force of gravity does the same amount of work upon it that the local winds had done in raising it to the cloud level against the force of gravity. If we are to prevent the ice from falling we must do this same amount of work per hour, or we must work at the same rate per hour and must keep up the work as long as the hail is to be held up, but it does not seem likely that man will ever be able to invent any method that can accomplish this result. Certainly the discharge of a few cannon will not do it.

WEATHER BUREAU MEN AS INSTRUCTORS.

Mr. S. M. Blandford, Observer, Boise, Idaho, reports that he lectured before the graduating class of the high school of that city on May 16 on the organization, growth, and functions of the Weather Bureau. The class, with its instructors, also visited the Weather Bureau office, and the various instruments were explained by the observer.

At Phoenix, Ariz., on May 22, Mr. W. G. Burns, Section Director, explained the use of the various instruments, and, by means of a series of weather maps, showed the movements of cyclones and anticyclones and the attendant weather changes, to an advanced class from the local high school.

At San Diego, Cal., on May 15, the senior class of the San Diego Normal School was entertained at the local Weather Bureau office by Observer Ford A. Carpenter, who gave an informal talk on the general work of the Bureau and explained the causes of some of the local peculiarities of climate.

Local Forecast Official I. M. Cline lectured to the South Texas Truck Growers' Association, at Edna, Tex., on May 9.

Section Director T. B. Jennings lectured on the weather and the Weather Bureau before the teachers and older scholars of the Lincoln School at Topeka, Kans., on May 29.

Observer Charles E. Linney lectured on the weather and weather forecasting before the Ladies' Aid Society of the Union Congregational Church at Auburn Park, Chicago, Ill.,

on May 31. The lecture was illustrated by means of instruments and charts.

Section Director J. B. Marbury has, during the past spring, delivered three lectures before the class in physical geography of the Boys' High School at Atlanta, Ga., his subjects being: "Weather Bureau instruments," "The weather map," and "Weather forecasts." Mr. Marbury states that his lectures were well received, and he is satisfied they have greatly increased the popularity of the Weather Bureau in his section. No doubt this is true of all the lectures delivered, since Weather Bureau methods only need to be known to be appreciated. There is no better way of disseminating knowledge than through the public schools of our land, and we note with pleasure the number of high schools that are interested in the work of the Weather Bureau, as evinced by the above lectures.

ANNUAL MEETING OF THE GERMAN ASSOCIATION OF INVESTIGATORS AND PHYSICIANS.

The Seventy-third Annual Meeting of the German Association of Investigators and Physicians (Deutsche Naturforscher und Aerzte) will be held in Hamburg September 22–28. A general invitation is extended to all interested in the sciences. Among the papers that are announced in the official preliminary program, the following will interest meteorologists:

Ahlhorn. On the mechanism of the resistance of fluid media.
Gleichen. The brightness and color of the eclipsed moon.
Mueller-Erzbach. The measurement of vapor pressure by means of evaporation.
Walter. A photographic apparatus for the more accurate analysis of the lightning flash.
[The apparatus suggested by G. K. Gilbert and constructed under the direction of A. Graham Bell in 1898, and mounted on the roof of the Weather Bureau, is also worth mentioning in this connection.—ED.]
Arctowski. On the auroral observations of the Belgian Antarctic Expedition.
" On the scientific problems of antarctic exploration.
Van Bebber. The present condition of weather telegraphy and weather forecasting.
Charlier. The astronomical explanation of a glacial period.
Eyre. Weather types and the daily forecast service of the Uslar Observatory (illustrated by photographs).
Floegel. Observations with the variometer and description of a convenient form of variometer.
Halm. On the relation of terrestrial magnetism to seismological processes and its importance to practical and theoretical astronomy.
Jensen. Facts and theories in reference to polarization of atmospheric sky light.
Koeppen. On meteorological kite ascensions with one or more practical exhibitions.
von Konkoly. The meteorological institute, the observatory, and the net work of stations in Hungary, with lantern slides.
Krebs. On the conditions governing water in the soil.
Lecointe. On the magnetic observations in the antarctic regions.
Maier. Dissipation of electricity in the free atmosphere.
Moeller. Observations of the weather since 1893, in Brunswick.
v. Neumayer. Recent magnetic work in the polar regions.
Satke. On cloud forms, especially the cirri.
Schmidt. The problems and the establishment of a bureau of computations relative to terrestrial magnetism.
Schubert. The interchange of heat between the ground, the water, and the atmosphere.
van der Stok. The observation and study of tidal phenomena on the coast of Holland.

MR. GUSTAVUS A. HYDE.

Through a press clipping from the Cleveland, Ohio, World, we recently learned that Mr. Gustavus A. Hyde, a civil engineer of that city, is one of Espy's original observers, and is now still engaged in meteorological work as a voluntary observer of the United States Weather Bureau. So far as we know, Mr. Hyde is the only one of Espy's pioneer observers who can show an uninterrupted record down to the present time, but if others are known to the readers of the REVIEW, the Editor will be glad to receive their names and addresses.

Continuous records of this character, antedating the official records of the Weather Bureau by many years, are of great value in studying the secular changes in the climate of a place, and Mr. Hyde has rendered a service to his community and to meteorologists generally that should not be allowed to pass unnoticed.

We reproduce in Plate IV an excellent photograph of Mr. Hyde, and, at our request, he has prepared, for publication in the REVIEW, the following autobiographical sketch:

The subject of this notice was born at Framingham, Mass., January 15, 1826. In 1842, having a curiosity to observe and record temperatures, he purchased a thermometer—an instrument rarely seen in those days—and commenced taking and recording any changes of temperature worthy of record. In December, 1842, there appeared in the newspapers a request from Prof. James P. Espy, of Washington, D. C, for voluntary observers to take observations of the temperature of the air, direction and force of the wind, beginning and ending of rain, and other meteorological phenomena of interest, and to forward the same to him at Washington, D. C., to enable him to demonstrate the correctness of his theories with reference to storms passing over our country. Mr. Hyde commenced his observations February 1, 1843, and made a complete record for the eleven months of that year. His name appears in the list of voluntary observers reported by Professor Espy to the Secretary of the Navy in 1844. For several years following, his records were intermittent, by reason of changes in residence and business interferences.

In 1855 Mr. Hyde moved to Cleveland, Ohio, and on the first of May of that year began a complete record of the temperature, wind, rain and snow, and the state of the sky, which has been continued to the present time, making forty-six years of complete record at the city of Cleveland, Ohio. Copies of this record have been sent to the various departments that have had charge of meteorological information during all of these years.

Mr. Hyde is probably one of a very few of Espy's original meteorological observers now living, and may be the only one who is now in the service of the Weather Bureau.

During Mr. Hyde's residence at Cleveland he has frequently furnished for public information copies of his observations for weeks, months, and years, and has made addresses before scientific societies and schools of the city on the storms of our country. After forty years' residence at Cleveland he published and distributed a summary and review of his observations for that period, showing the local peculiarities in the temperature, sky, wind, rain, and snow.

He is still a voluntary observer for the Weather Bureau.

ERRATA.

MONTHLY WEATHER REVIEW for April, 1901, page 163, table of Mexican data for April, 1901, last line, for "relative humidity, 63," read "36," and for "precipitation, ...," read "0.00."

WEATHER REVIEW, December, 1900, page 536, 2d column, last equation, for

$$= \tfrac{1}{2}(q^2_3 + q^2_2 - q^2_4 - q^2_1) + g(z_3 + z_2 - z_4 - z_1),$$

read

$$= \tfrac{1}{2}(q^2_2 + q^2_4 - q^2_1 - q^2_3) + g(z_2 + z_4 - z_1 - z_3).$$

Mr. H. Pittier requests that on page 208 of this REVIEW, in table 3, rainfall at stations in Costa Rica, 1901, the rainfall for Zent be corrected to read "23 millimeters" instead of "30 millimeters."